# Global Recession and the National System of Innovation in China

*'A Blessing in Disguise'?*

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# Global Recession and the National System of Innovation in China: 'A Blessing in Disguise'?

Ju Liu[*], Angathevar Baskaran[**], and Mammo Muchie[***]

**Abstract**

Since the early 1990s China's economy has emerged one of the leading economies in the world due to factors such as judicial mix of policies of economic liberalisation and protection, and the process of globalisation driven by the information and communication technologies (ICT) revolution, which brought closer the national economies across the globe as never before. China's national system of innovation (NSI) has been evolving and has been adapting to the challenges posed particularly by the phenomenon of globalisation. China has benefitted significantly from the global economic boom driven by the globalisation and its economy has registered consistently GDP growth of over 10% since 2002 until the onset of global recession in 2008. The recession has slowed down the economy in every country in the world including China, triggered by the global credit crunch and slow down of trade. Major economies across the world have introduced a series of measures in response to recession and to stem the tide of its negative impacts. These measures included: bank bailouts, rescue packages, fiscal stimuli, and, most crucially, monetary easing. Even with all these measures, we would argue that, some countries are likely to be affected more severely than others due to the differences in individual characteristics of their NSIs. That is, the recession is likely to have varying impacts in varying degrees on different economies in the world due to the differences among their NSIs.

In the case of China, to reduce the negative impacts of the global recession, it announced a fiscal stimulus package of $586b (14 per cent of GDP) in November 2008. This measure aimed to stimulate during 2009-10 the domestic demand by reducing taxes, investing in public infrastructure, and promoting

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activities in the areas such as health care and education, agriculture, low-income housing, water, electricity, transportation, environment, and technological innovation. It is also designed to boost the income of the poor. In this context, we wish to investigate the following research questions: 1. How did the strengths and weakness of NSI help or hinder in coping with the adverse effects of the recession in China? and conversely 2. What are the impacts of recession on the NSI in China? By employing secondary and descriptive data we attempt to investigate these questions.

It appears that China is the least affected emerging market by the global recession mainly due to the inherent strength of its NSI. Also, it appears that China has decided to use the global recession as an opportunity rather than an obstacle and as 'blessing in disguise' to introduce changes and re-engineer its economy and NSI.

## 1. Introduction

The current global recession triggered by the sub-prime mortgage market in the United States (US) in 2007 set snowballing effect on national economies around the globe, affecting almost every country in varying degrees and at varying time. The multinational institutions such as the United Nations (UN), International Monetary Fund (IMF), and the World Bank have the world economic growth would be severely affected in 2008-2009. Developing countries are likely to be affected by lower demand for exports, reduced commodity prices, reduced capital inflows, delayed investments, and exchange rate volatility (United Nations 2009; AfDB et al, 2008, Economic Commission for Africa, 2008). This became the reality as countries started experiencing the impact of global recession from the second half of 2008. Also, since mid-2008 commodity prices have dropped sharply due to weakened demand.

The likely nature and shape of impact of the recession on the emerging economies such as China and India and other developing countries have generated considerable interest among the world multilateral institutions such the UN and IMF and scholars. There seems to be a consensus that among the developing and emerging economies some countries will be affected the most severely than others due to economy-specific factors and characteristics. For example, in the banking/ financial sector which triggered the credit crunch in the developed economies which in turn accelerated the recession it is argued that the emerging economies such as BRICS would not be affected to the extent of developed economies. At the same time it is also argued that there are significant differences in the impact on even the banking/financial sectors among the BRICS economies (Brazil, Russia, India, China and South Africa). There were other reports and writings focussing on particularly China and suggesting that its economy might not be affected seriously by the global

recession. For example, a study by Credit Suisse has shown that China is least affected by the credit crunch, and India is facing domestic liquidity problem (Financial Chronicle, 9 December 2008). This caught our attention and we came up with the argument that this is because of the nature and distinct characteristics of China's NSI. That is, we propose to examine how far the relative strength or weakness of the NSI in China has influenced the nature and shape of the impact of global recession on its economy. We employ secondary and descriptive data to analyse this. Our research would contribute in two ways: first, it provides a heuristic conceptual framework linking NSI and the impact of global recession and second, it illustrates how China's NSI is influencing and being influenced by the global recession.

The paper is structured as following: section 2 presents a conceptual framework to link and analyse the NSI and its potential influence on the impact of global recession; section 3 presents the case of China's NSI and China's response to global recession, section 4 provides data analysis employing the conceptual framework, and section 5 presents our conclusions and policy recommendations.

## 2. NSI and its potential influence on the impact of recession: a conceptual framework

A system of innovation, in general, brings together all the significant economic, social, political, organisational, institutional and other factors and their interactions and influences the development, diffusion, and application of innovations. Though interest in the innovation systems approach have grown since the 1980s, its origin dates back to the nineteenth century catch up aspirations of economies like that of Germany with Britain.

Although Friedrich List (1856) and his concept national production system may be seen as the historical origin of the national system of innovation (Freeman, 1995), according to Bengt-Åke Lundvall, the modern version of the concept appeared first in an unpublished contribution to OECD by Freeman (1982). Since then, it has evolved over the years (e.g. Freeman, 1987, 1995; Lundvall, 1985, 1988, 1992, 2007; Nelson, 1993; and Edquist, 1997). Although NSI concept was used mainly in the context of developed economies, increasingly it began to be used to study developing countries (e.g. Fang, 1997; Cimoli, 2000; Liu，2006；Lian, 2006; Intarakumnerd and Chaaminade, 2007); Intarakumnerd and Chaaminade, 2007). Also, there have been attempts to broaden NSI approach to study the problems and challenges of development and underdevelopment (e.g. Muchie *et al*., 2003). Thus, NSI provides the conceptual approach or framework for studying both developed and developing economies at various stages of development. We adopt NSI conceptual framework to investigate the degree to which different BRICS countries with differing levels

of NSI strength and weakness cope in mitigating some of the adverse impacts of the recession. This is done by first identifying those elements of NSI which could have significant impact on the effectiveness of recession.

Lundvall (2007, p. 102) argued that NSI concept can be employed at two levels: (i) the 'core' - "*firms in interaction with other firms and with the knowledge infrastructure*" including universities; and (ii) 'wider setting' that includes "*national education systems, labour markets, financial markets, intellectual property rights, competition in product markets and welfare regimes*". In the 'wider setting' the government plays a major role in a number of ways. We would argue that in the narrow sense NSI involves a system of interaction of a wide variety of public and/ or private firms with other institutions such as universities, and government agencies -- all working together towards attaining the production and diffusion of knowledge and science, technology, and innovation within the boundaries of legally recognised states. The form of the interaction can take both technical and non-technical dimensions. It could be organisational, institutional, commercial, physical, human, mental, legal, social, and financial interactions. The broader goal of such interactions is the socio-economic development, regulation, and support for new science, technology, innovation within the country by dealing with and responding to both internal and external challenges. For this study, we employ the NSI concept in its wider setting.

Baskaran and Muchie (2009, 2010) formulated a conceptual framework derived from the wealth of literature discussed above to investigate how and to what degree differing levels of NSI strength and weakness in different BICS economies and selected Asian economies coped in mitigating some of the adverse impacts of the recession. In this paper we have adopted the same NSI conceptual framework to study the case of China more in depth. Baskaran and Muchie identified four key sets of elements of NSI. 1. The first set *Conceptual Framing* involves the ideas and policies that frame the overall scope or possible set of interactions of politics, economics and knowledge. The behaviour and interactions are often shaped by sets of common habits, norms, routines, established practices, rules, or laws. 2. The second set involves *Institutions, Technologies, and Knowledge and their co-evolution which enable* implementation of the conceptual framing and policies selected above (the first set) and to build an efficient innovation system. 3. The third set involves the means provided to the institutions (second set) for realising the goals set (first set), that is, various incentives such as financial and social rewards. It is vital to foster appropriate incentive system. If the incentive system is inappropriate or fails to command wider acceptance, the opportunity to organise robust NSI and achieve measurable results will be put in jeopardy. 4. The fourth set highlights the overall efficiency of the environment for learning in terms of

implementation, monitoring, review, and feedback involving the above three sets.

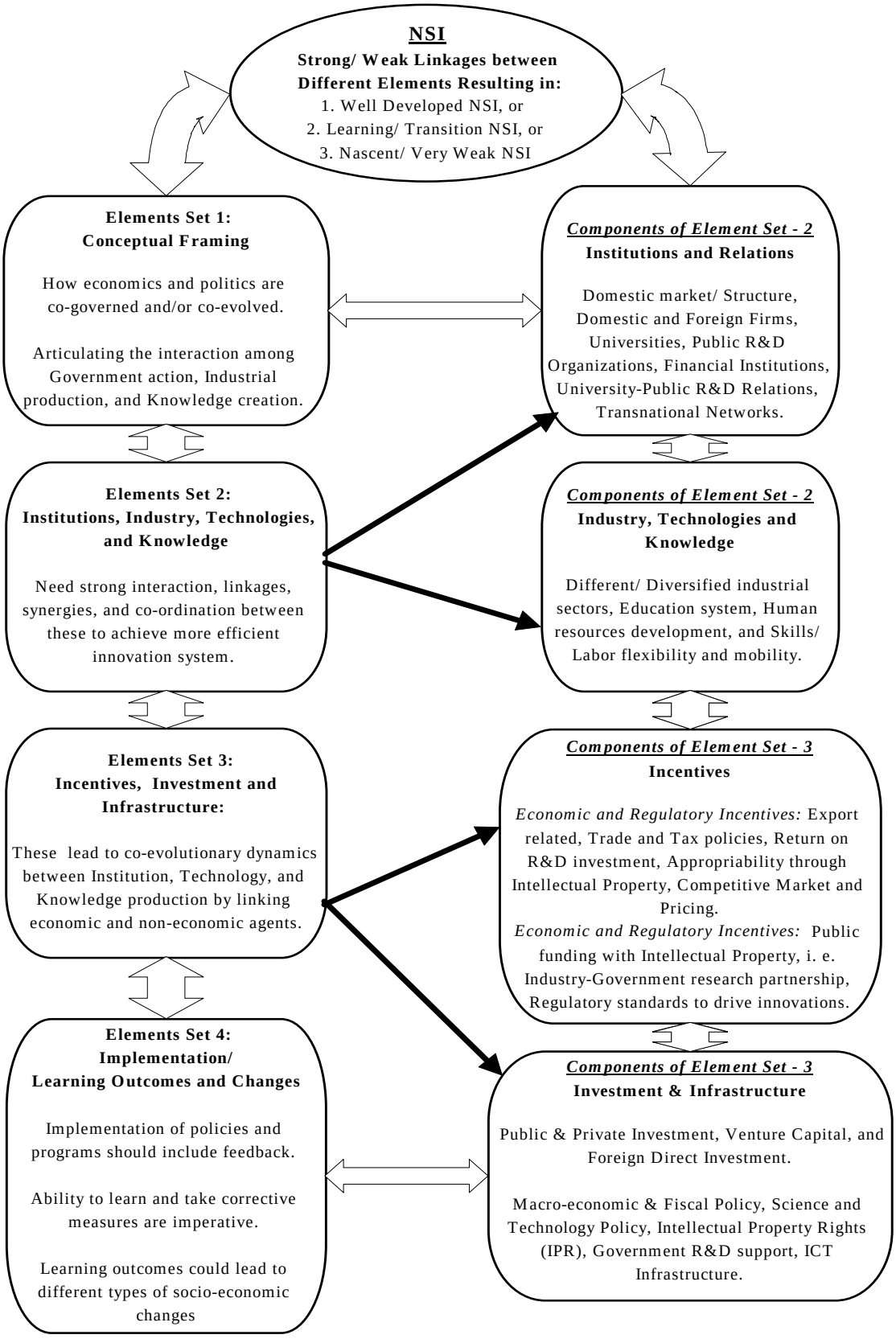


**Figure 1: Four Major Sets of Elements of National System of Innovation (NSI)**

The learning outcomes can be different such as transformative, adaptive, corrective, modifying, evolutionary, and so on. This can also be negative.

The relationships between these four sets of elements that constitute NSI are illustrated by Figure 1.

**Table 1: Some Major Components of NSI that Could have Mitigating Impact on Recession**

| *Components of NSI that could Impact on Recession* | *Related to the Elements of NSI (As shown in Figure 1)* |
|---|---|
| *1. The general investment climate and economic policy framework:*<br><br>(a)Macroeconomic and social stability<br>(b) National fiscal policy regime<br>(c) Foreign debt<br>(d) Inflation<br>(e) Interest rate, and Exchange rate<br>(f) Regulatory regime such as trade and tax policies<br>(g) Nature and role of FDI | NSI Elements Set 3 and components: Investment & Infrastructure, and Incentives |
| *2. Market, per capita income, domestic savings:*<br><br>(a) Domestic market size / structure<br>(b) Links to regional and global markets<br>(c) Domestic savings growth | NSI Elements Sets 2 and components: Institutions and Relations |
| *3. Industrial structure:*<br><br>(a) Presence of diverse industrial structure<br>(b) Strength of domestic firms<br>(c) Presence and role of foreign firms<br>(d) Links to foreign companies/ foreign financial market | NSI Elements Sets 2 and Set 3 and components:<br>Institutions, Investment & Infrastructure, and Incentives |
| *4. Financial Institutions:*<br>(a) Banking sector<br>(b) Role and effectiveness of the Central Bank<br>(c) Links to foreign financial market | NSI Elements Set 2 and components: Institutions, Industry Sectors, Technologies and Knowledge |
| *5. Foreign Trade:*<br><br>(a) Nature of exports/ Imports<br>(b) Export markets (Destinations)<br>(c) Dependence on commodity exports | NSI Elements Set 2 and Set 3 and components:<br>Industry, Technologies and Knowledge; and Incentives |
| *6. Skills, R&D, and Technology development*<br>(a) Investment in education and skills (human resources) development<br>(b) Investment in R&D | NSI Elements Set 2 and Set 3 and components: Industry, Technologies and Knowledge; and Incentives |

Among the four sets of elements, there are two sets which are relevant to making linkages and relations between NSI and recession, namely Set 2 (Institutions, Industry, Technologies and Knowledge), and Set 3 (Incentives, Investment and Infrastructure). While we capture the importance of set 1 and set 4 in our NSI conceptual framework, we focus more in depth on set 2 and set 3, as these sets illustrates more concretely the inter-relationship between various actors and means necessary to build an efficient innovation system to cope with recession. The strong presence and interaction and linkages between various institutions, industrial sectors, technologies, knowledge, incentives, investment, and infrastructure determine the higher or relatively stronger or weaker level of functioning of a particular NSI. We would argue that the relative strength of an NSI can have a mitigating impact on recession. We identified 6 sets of components (sub-elements) of NSI that could have significant mitigating impact on recession. These are shown in Table 1. These are part of 4 sets of major NSI elements that are illustrated in Figure 1. These NSI elements and components of these elements are largely derived from the *Word Investment Reports* published by the UNCTAD (e.g. 2002, 2003, 2005) and the NSI literature.

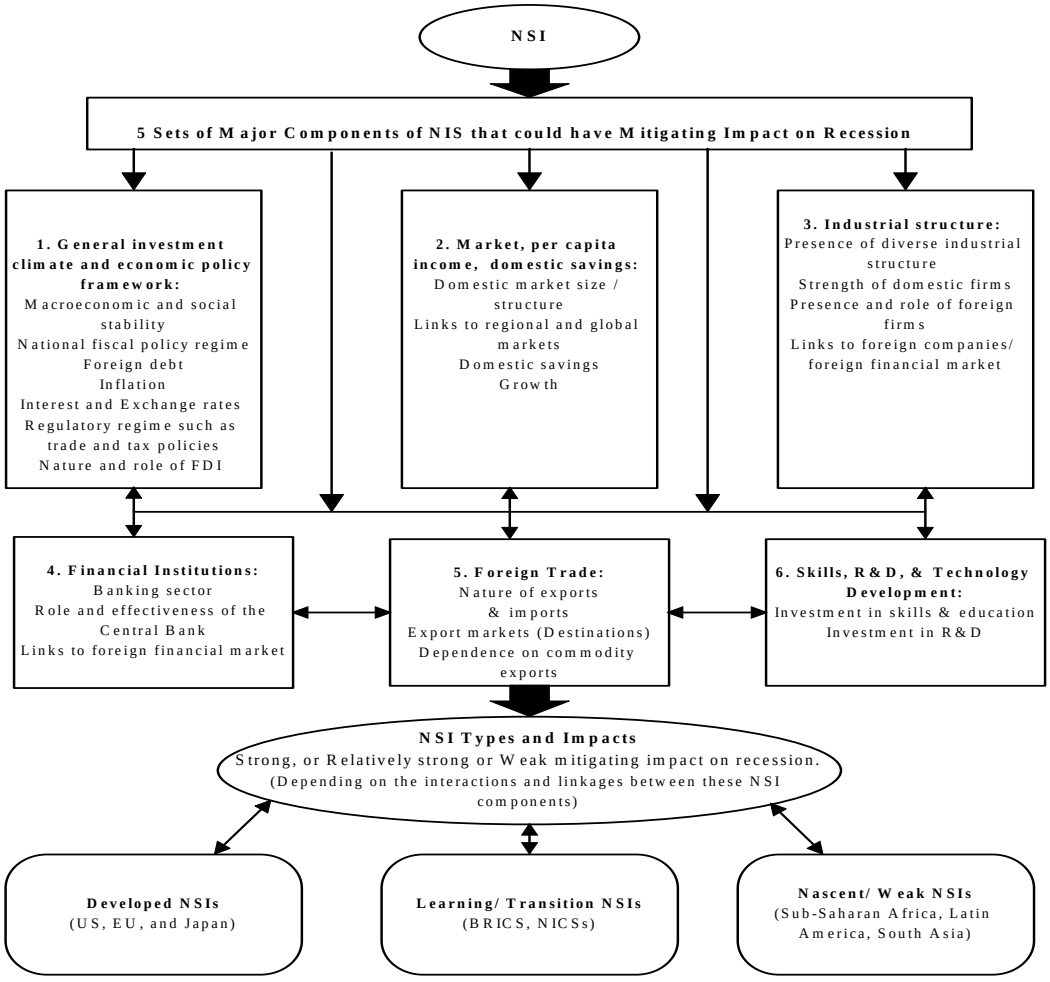


**Figure 2: Strength of National System of Innovation and its Mitigating Impact on Recession: A Conceptual Framework**

Figure 2 presents a conceptual framework linking 6 sets of NSI components or sub-elements (which are identified from the 4 major sets of NSI elements as shown in Figure 1) to the mitigating impact of NSI on recession. The degree of strength of these NSI components and interaction between them will make an NSI as either developed, transition/ learning, or nascent/ weaker. The important issue we are highlighting here is that although there are many similarities between systems of innovation, there are also differences related to the stage of development, characteristics of NSI evolution, path dependency, institutions, laws, policies, and incentives. These in turn are likely to have either strong, relatively strong or weak mitigating impact on recession. That is, if a country has a well functioning or strong 6 sets of NSI components identified in Table 1 and Figure 2, it is likely to witness high mitigating impact on recession. On the other hand, if a country has a non-functioning or weak 6 sets of NSI components, it is likely to witness no or little mitigating impact on recession. If a country has a relatively well functioning 6 sets of NSI components, then it is likely to have a relatively strong mitigating impact on recession.

What we mean by mitigating capability is the ability of NSI to deal with and respond to unforeseen or foreseen crisis that could be induced internally or externally or by the combination of both domestic and internationals factors. The tendency is towards restricting or contraction of the economy due to changes in business cycle or recessionary down turn in economic activity. Therefore the key to see mitigative capability is how NSI components respond and deal with this challenge. So, we correlate the NSI components to the recessionary downturn to explore whether they can cope or not. This is done by using indicative and descriptive data. For example, we take the GDP and see whether they have contracted or is it still growing, or reduced severely or slightly. We try to show through this the underlying economic strength or weakness or relative strength or weakness of the NSI to deal with the recessionary crisis.

We are contributing by adding to the existing body of NSI literature by linking NSI framework to its potential mitigating impact on recession in national economies. The way we did this theoretically is first to identify the four sets of elements that constitutes the NSI and then identify 6 sub-elements or components of NSI (as shown in Figures 1; and Table 1) and try to conceptualize whether and how weak or strong they can have mitigating impact on recession. In actual fact we are looking for making a paradigm change of the way economic development and recession can be appreciated by employing NSI framework (see Figure 2). In this paper we illustrate this empirically by analysing the NSI of China using descriptive and secondary data.

## 3. The global recession and China's NSI

According to the Economic and Social Survey of Asia and the Pacific 2008, by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) China will remain resilient, as strong domestic demand is likely to neutralise partly the impact of global recession. The Survey found that not only in the case of China but also most other countries in the Asia-Pacific region have strong macro-economic fundamentals (efficient fiscal and monetary policies, declining budget deficits, and even surpluses) which along with underlying regional domestic demand are likely to overcome the global recession triggered by the US' downturn. It is argued that firms in the Asia-Pacific economies including China are largely resilient to the credit crunch in the US and EU, as they are generally cash rich and not highly leveraged. For example, a report by Credit Suisse stated that "in China Internet, telecom and winery sectors are particularly top ranked, thanks to their low gearing or net cash positions, with their domestic customers facing limited credit tightening issues"(see Website B). The ESCAP survey also pointed to the fact that firms in these countries including China are more conservative as borrowers and also their central banks are also capable of meeting the liquidity demand by the financial sector. Indeed, the banks in the US and EU appear to be looking to Asian funds to build their depleted capital bases (ESCAP, 2008). For example, many global banks such as HSBC, GE Money and Standard Chartered are started looking towards emerging markets like China to offset the global losses (BBC, 06 August 2008).

According to a report by Credit Suisse China is likely to be the least affected emerging market by the current credit crunch and global recession. Credit Suisse studied the impact of liquidity crunch on 216 companies in 59 sectors across 10 markets in the Asia Pacific region. It said that in Asia, except China, other markets are enduring a similar phenomenon as in the US because companies are facing difficulties in accessing funds (see Website B). After the US, China is now the second most financial power in the world. In terms of market capitalisation, it has three of the four largest banks, the two largest insurance companies, the second-largest stock market and an increasing number of investment funds (Economist, 6 February 2010).

However, like the case of Brazil and South Africa, it is opined that China is facing or likely to face some negative impact from the global recession. For example, according to Sunil Poshakwale because of the developments in the US, stock markets in China have reacted negatively. They suffered mainly due to large scale withdrawal made by foreign institutional investors, mainly from the US, as they need cash in the US due to credit crunch in the US. But this appears to be happening in all emerging markets and not just in China. For example, nearly $26bn worth of outflows have occurred between June and August 2008 from the emerging market economies, compared to about $100bn that happened

during the five years between 2002 and 2007. Therefore, the stock markets are reacting negatively in these markets (Poshakwale, 2008).

Poshakwale also pointed out some other short term problems faced by China. He argued that unlike India, China has been much more proactive and taking risks by going out and investing. It had to do this to keep the exchange rate (particularly with reference to US$) at a competitive level. China has been buying US government bonds, treasury bills and bonds issued by investment banks. In fact, three banks in China have bought about $10.5bn worth of bonds and some of those bonds were issued by the Lehman Brothers which went bankrupt. Because of such direct investments in the US, there is likely to be a direct impact on China. In the manufacturing sector particularly in Southern China, due to weakening global demand, there have been plant closures and layoffs. China's exports are suffering a bit because of the fall of the US dollar (Poshakwale, 2008).

China's GDP growth has dropped from 11.4% in 2007 to 9.1% in 2008 and has declined further to 8.7% in 2009 and also its current-account surplus dropped from 11.5% of GDP in 2007 to 8.5% of GDP in 2008. This is due to a number of reasons such as declining demand for Chinese exports in mainly in the developed economies, the appreciation of its national currency and rising labour costs. China's exports to the US and EU amount to about 8% and 7% of GDP respectively, and therefore recession in these economies are likely to have significant impact on China (UN, 2009, p.116; Akyuz, 2008, p.38). But declining exports have actually led to increase in China's trade surplus in 2008. This is due to sharp decline in imports of inputs that go into export products. This is also due to reduced domestic demand. But in 2009, imports are expected to increase with the implementation of planned increase in infrastructure investment, which will stimulate demand for raw materials and machinery (Economic Commission for Africa, 2008). According to preliminary ESCAP forecasts of the impact of the recession, particularly the sharp economic slowdown in the US, on China's growth in 2009 indicate that its exports will decline from 13.4% to 4.5% (ESCAP, 2008a, p.2).

To face the potential adverse impacts of the global recession, in November 2008, China announced a fiscal stimulus package of $586b (14% of GDP) to be implemented during 2009-10. Using this over two years it aims to stimulate domestic demand by reducing taxes, investing in public infrastructure, and promoting activities in the areas such as health care and education, agriculture, low-income housing, water, electricity, transportation, environment, technological innovation and rebuilding areas. The stimulus package is also designed to boost the income of the poor through measures including higher

subsidies and an increased government purchase price for grains in 2009 (UN, 2009, p.116; Economic Commission for Africa, 2008).

The fiscal stimulus package will increase infrastructure investment mainly in railways, airports, environmental infrastructure, low-cost housing and the re-construction of areas affected by the earthquake in Sichuan in 2008. The expenditure on education and healthcare will be increased substantially in 2009-10. While the US government spending is directed at consumption, the main focus of China's stimulus is towards investment on infrastructure and new technologies that will help future growth. The government is using the global recession as an opportunity to build sophisticated infrastructure for the second tier cities. It is planning to invest $200 billion on railways in two years, building 44,000 miles of new roads and 100 new airports in the next decade. China is also investing in alternative energy sector and it now spends more on solar, wind, and battery technology than the US. Among the top 10 companies (by market capitalization) in this sector, four are Chinese and three are American. It is also investing heavily in higher education (Zakaria, 2009).

The government also reduced or suspended a number of taxes to help the businesses. The People's Bank of China 9the central bank) has relaxed the monetary policy by removing loan quotas, and reducing interest rates and reserve ratio. China has also used the global financial crisis to internationalize the use of RMB in global trading. For this, it instituted a series of currency swap agreements worth RMB650b (US$95b) with countries including Malaysia, Indonesia, South Korea, Hong Kong, Argentina and Belarus (The Economic Intelligence Unit, 2009).

Despite this, growth dropped to 8.7% in 2009, mainly due to very weak global demand and significant drop in exports and slowdown experienced by the real estate sector that affected the steel and cement sectors. However, slowdown in growth is expected to be a short term problem rather than a long-term trend. Because, even within domestic market China has significant potential for growth as demands remain strong. For example, retail sales in China have been growing by 20% a year (BBC, 06 August 2008). It is further argued that by itself the current credit crunch may not seriously affect the economic growth in China and it may reduce the growth rate by a couple of percentage points. However, serious external problems such as sudden stop of capital flows and contraction of export markets are expected to have severe impact on China's growth rate. Despite significant drop in exports, the trade surplus remained huge in 2009.

Table 2 shows key economic indications for China. It is clear that GDP growth in China has dropped from 13% in 2007 to over 9% in 2008. The gross domestic savings have grown significantly until 2007 and dropped slightly in 2008, but it is still significant (i.e. about 50% of GDP). Inflation has increased by 1% in

2008, but budget balance and current account balance are significant. But the export growth has dropped significantly in 2008, but imports remained strong (dropped only slightly) in 2008. The RMB has appreciated significantly against the US$ during 2007-2008. The global recession appears to have significant negative impact during 2008-2009. This is clear from the declining figures in number of areas including Industrial value-added output growth, Retail sales growth, Urban per capita disposable income growth, and Rural per capita net income growth. However, the Fixed-asset investment growth has increased significantly in 2008-2009. Investment remained strong due to relaxed credit policy that helped to increase lending by the banks. China also issued 'local government bonds' to raise planned US$200billion to finance the infrastructure projects.

**Table 2: China: Key Economic Indicators (excluding Hong Kong and Macao)**

| ***Indicators*** | ***2000*** | ***2001*** | ***2002*** | ***2003*** | ***2004*** | ***2005*** | ***2006*** | ***2007*** | ***2008*** | ***2009*** |
|---|---|---|---|---|---|---|---|---|---|---|
| Real GDP Growth Rates (%) | 8.4 | 8.3 | 9.1 | 10.0 | 10.1 | 10.4 | 11.6 | 13.0 | 9.0 | 8.7 |
| Gross Domestic Savings Rates (% of GDP) | 38.0 | 39.0 | 40.4 | 43.0 | 45.6 | 47.3 | 47.8 | 48.6 | 49.9 | -- |
| Gross Domestic Investment Rates (% of GDP) | 35.1 | 36.3 | 37.9 | 41.2 | 43.3 | 43.3 | 44.5 | 44.2 | 41.8 | -- |
| Fixed-Asset Investment Growth (%) | 10.3 | 13.0 | 16.9 | 27.7 | 26.8 | 26.0 | 23.9 | 24.8 | 25.9 | 30.1 |
| Inflation Rates (%) | 0.4 | 0.5 | -0.8 | 1.2 | 3.9 | 1.8 | 1.5 | 4.8 | 5.9 | -0.7 |
| Budget Balance (% of GDP) | -2.8 | -2.5 | -2.6 | -2.2 | -1.3 | -1.2 | -0.8 | 0.7 | 0.4 | |
| Current Account Balance (% of GDP) | 1.7 | 1.3 | 2.4 | 2.8 | 3.5 | 7.0 | 9.1 | 11.5 | 10.2 | 6.9[e] |
| Merchandise Export Growth Rates (%) | 27.9 | 6.7 | 22.4 | 34.6 | 35.4 | 28.4 | 27.2 | 25.7 | 17.3 | -- |
| Merchandise Import Growth Rates (%) | 24.4 | 12.6 | 27.1 | 39.9 | 36.0 | 17.6 | 19.9 | 20.7 | 18.4 | -- |
| Foreign Exchange Reserves ($ billion) | 165.6 | 212.2 | 286.4 | 403.3 | 609.9 | 818.8 | 1066.3 | 1528.2 | 1946.0 | 2399.2 |
| Foreign Exchange Rate (= 1US$) | 8.28 | 8.28 | 8.28 | 8.28 | 8.28 | 8.07 | 7.81 | 7.30 | 6.83 | 6.83 |
| Foreign Debt ($ billion) | 145.7 | 170.1 | 171.4 | 193.6 | 228.6 | 281.0 | 323.6 | 373.6 | 374.7 | -- |
| Industrial Value Added Output (% Growth)** | 17.8 | 11.6 | 16.5 | 27.3 | 30.5 | 31.7 | 26.2 | 28.5 | 12.9 | 11.0 |
| Retail Sales Growth (%) | 9.7 | 10.1 | 11.8 | 9.1 | 13.3 | 12.9 | 13.7 | 16.8 | 21.6 | 15.5 |
| Urban Per Capita Disposable Income Growth (%) | 7.3 | 9.2 | 12.3 | 10.0 | 11.2 | 11.4 | 12.1 | 17.2 | 14.5 | 8.8 |
| Rural Per Capita Net Income Growth (%) | 1.9 | 5.0 | 4.6 | 5.9 | 12.0 | 10.8 | 10.2 | 15.4 | 15.0 | 8.2 |
| Registered Urban Unemployment Rate | 3.1 | 3.6 | 4.0 | 4.3 | 4.2 | 4.2 | 4.1 | 4.0 | 4.2 | -- |
| Expenditure on R&D as % of GDP | 0.90 | 0.95 | 1.07 | 1.13 | 1.23 | 1.33 | 1.42 | 1.5 | -- | -- |
| Public Expenditure on Education as % of GDP | 1.9 | -- | -- | -- | -- | -- | -- | 4.9[+] | -- | -- |

*Source:* ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations. * Either estimated figure or for only part of the year; IMF (2009), Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systematic Risk, April, Washington D.C: IMF, Table 11, p. 190; UNESCO - Statistics on Research and Development, and Education. Available at: http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx (Accessed: 23 March 2010); [+] Ministry of Education, China (2008); US-China Business Council (no date), *China's Economic Statistics*, Available at http://www.uschina.org/statistics/economy.html. **All state-owned industrial enterprises and all non-state industrial enterprises with revenue from principal business of more than RMB 5 million. -- means Not Available.

Table 2 also shows that China has been investing in R&D between 1% and 1.5% of GDP since 2002. Its total R&D expenditure in 2007 was 371.02 billion RMB (1.5% of GDP) which increased to 461.6 billion RMB (1.54% of GDP) in 2008. Between 2001 and 2006, while corporate R&D in the US and Europe grew by 1-2%, in China it jumped to 23%. China's corporate R&D spending (percentage of GDP) is almost same as that of the European Union (around 1%). China is likely to overtake Japan soon in total research spending (Economist, 3 January 2009). From UNESCO - Statistics it is also clear that the growth in number of researchers have been significant in China and it has been growing faster than other countries such as India and Brazil. In China, the education expenditure in 2007 was 1214.80 billion RMB (4.9% of GDP) which increased to 1450.07 billion RMB (4.82% of GDP) in 2008 (Ministry of Science and Technology, 2008; Ministry of Education, 2008).

Table 3 shows the trend in the composition of GDP by sectors in China since 1991. It clearly shows that the primary sector's (Agriculture) contribution to GDP has declined from over 14% in 2001 to 11% in 2008 and the contribution of the industry (excluding the Construction sector) has increased during the same period from 40% to 43%, and the contribution of tertiary sector (Services) remains at about 40%. That is, about 90% China's GDP is composed of manufacturing and services. However, the composition of the labour force by occupation in 2008 was estimated as: agriculture - 39.5%; industry - 27.2%; and services - 33.2%. This shows the predominant dependence on Agriculture sector for employment.

**Table 3: China - GDP Composition (1991 – 2008)**

| Year | GDP % | Primary industry % | Secondary industry % | Secondary industry | | Tertiary Industry % |
|---|---|---|---|---|---|---|
| | | | | Industry % | Construction % | |
| 1991 | 100.0 | 24.5 | 41.8 | 37.1 | 4.7 | 33.7 |
| 1992 | 100.0 | 21.8 | 43.4 | 38.2 | 5.3 | 34.8 |
| 1993 | 100.0 | 19.7 | 46.6 | 40.2 | 6.4 | 33.7 |
| 1994 | 100.0 | 19.8 | 46.6 | 40.4 | 6.2 | 33.6 |
| 1995 | 100.0 | 19.9 | 47.2 | 41.0 | 6.1 | 32.9 |
| | | | | | | |
| 1996 | 100.0 | 19.7 | 47.5 | 41.4 | 6.2 | 32.8 |
| 1997 | 100.0 | 18.3 | 47.5 | 41.7 | 5.9 | 34.2 |
| 1998 | 100.0 | 17.6 | 46.2 | 40.3 | 5.9 | 36.2 |
| 1999 | 100.0 | 16.5 | 45.8 | 40.0 | 5.8 | 37.7 |
| 2000 | 100.0 | 15.1 | 45.9 | 40.4 | 5.6 | 39.0 |
| | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2001 | 100.0 | 14.4 | 45.1 | 39.7 | 5.4 | 40.5 |
| 2002 | 100.0 | 13.7 | 44.8 | 39.4 | 5.4 | 41.5 |
| 2003 | 100.0 | 12.8 | 46.0 | 40.5 | 5.5 | 41.2 |
| 2004 | 100.0 | 13.4 | 46.2 | 40.8 | 5.4 | 40.4 |
| 2005 | 100.0 | 12.2 | 47.7 | 42.2 | 5.5 | 40.1 |
| | | | | | | |
| 2006 | 100.0 | 11.3 | 48.7 | 43.1 | 5.6 | 40.0 |
| 2007 | 100.0 | 11.3 | 48.6 | 43.0 | 5.6 | 40.1 |
| 2008 | 100 | 11.3 | 48.6 | 42.9 | 5.7 | 40.1 |

*Source:* Website of National Bureau of Statistics of China http://www.stats.gov.cn/tjgb/

**Table 4: China: Gross Domestic Product (GDP) – Quarterly Trends in 2008 and 2009**

| Quarterly Period | Gross Domestic Products | Primary Industry | Secondary Industry | Tertiary Industry |
|---|---|---|---|---|
| **2008 - Quarter 1** | | | | |
| Absolute Value (in 100 million Yuan) | **66284** | 4679 | 32158 | 29447 |
| Growth Rate over same period last year (%) | **11.3** | 2.7 | 12.0 | 11.6 |
| **2008 - Quarter 2** | | | | |
| Absolute Value | **140478** | 11697 | 70543 | 58238 |
| Growth Rate - % Change | **11.0** | 3.4 | 11.9 | 11.4 |
| **2008 - Quarter 3** | | | | |
| Absolute Value | **217026** | 21869 | 105889 | 89268 |
| Growth Rate - % Change | **10.6** | 4.4 | 11.2 | 11.2 |
| **2008 - Quarter 4** | | | | |
| Absolute Value | **314045** | 33702 | 149003 | 131340 |
| Growth Rate - % Change | **9.6** | 5.4 | 9.9 | 10.4 |
| **2009 - Quarter 1** | | | | |
| Absolute Value | **68682** | 4660 | 32515 | 31507 |
| Growth Rate - % Change | **6.2** | 3.5 | 5.4 | 7.4 |
| **2009 - Quarter 2** | | | | |
| Absolute Value | **145985** | 11915 | 71391 | 62680 |
| Growth Rate - % Change | **7.1** | 3.8 | 6.7 | 8.3 |
| **2009 - Quarter 3** | | | | |
| Absolute Value | **227597** | 22300 | 108629 | 96668 |
| Growth Rate - % Change | **7.8** | 4.0 | 7.7 | 8.9 |
| **2009 - Quarter 4** | | | | |
| Absolute Value | 335353 | 35477 | 156958 | 142918 |
| Growth Rate - % Change | **8.7** | 4.2 | 9.5 | 8.9 |

*Source:* National Bureau of Statistics of China (Available at: http://www.stats.gov.cn/english/statisticaldata/Quarterlydata/)

*Notes by NBSC:*

1. Absolute value is computed at current price, growth rate is computed at constant price.
2. Statistical data in this table adjusted according to the results of the Second National Economic Census (2008).
3. Statistical data in this table are preliminary verification results (2009).

Table 4 shows the Gross Domestic Product (GDP) – Quarterly Trends in 2008 and 2009 in China. It shows that the GDP growth fell to 9.6% in Quarter 4 of 2008 compared to 11.3% in Quarter 1 of that year. This is mainly because of the

significant decline of growth in the secondary industry and a relatively small decline in tertiary industry. The GDP growth registered a sharp decline in Quarter 1 of 2009, that is, 6.2% compared to 9.6% in the Quarter 4 in 2008 due to sharp decline of growth in all three sectors. But by Quarter 4 it recovered to 8.7% mainly because of significant recovery in all three sectors.

Table 5 provides China's trade volume, both imports and exports. It is very clear China has achieved a large trade balance particularly since 2005. While exports have seen big increase, the imports also have increased which suggests that increasing exports caused increased demands for imported goods. Global recession appears to have affected significantly both the exports and imports of goods and services. The real growth of exports was about 10% in 2008 compared to over 16% in 2007 and it was estimated to be -8.8% in 2009. Similarly the real growth of imports in 2008 was 4.1 compared to over 13% in 2007 and it was estimated to be -8.0% in 2009 (The Economic Intelligence Unit, 2009). Although export volume declined significantly as external demand dropped, the negative impact on the growth was small or marginal, as imports also witnessed a large drop mainly because of the decline in import demand by the exporting companies. Because of this, trade surplus actually increased significantly during recession period.

**Table 5: China -- Total volume of import and export (1991 – 2008)** (Since 1980 are numbers of customs import and export statistics)

| **Year** | **RMB (100 million)** | | | | **USD (100 million)** | | | |
|---|---|---|---|---|---|---|---|---|
| | *Total volume of Export & Import* | *Total volume of Export* | *Total volume of Import* | *Balance* | *Total volume of Export & Import* | *Total volume of Export* | *Total volume of Import* | *Balance* |
| | | | | | | | | |
| 1991 | 7225.8 | 3827.1 | 3398.7 | 428.4 | 1357.0 | 719.1 | 637.9 | 81.2 |
| 1992 | 9119.6 | 4676.3 | 4443.3 | 233.0 | 1655.3 | 849.4 | 805.9 | 43.5 |
| 1993 | 11271.0 | 5284.8 | 5986.2 | -701.4 | 1957.0 | 917.4 | 1039.6 | -122.2 |
| 1994 | 20381.9 | 10421.8 | 9960.1 | 461.7 | 2366.2 | 1210.1 | 1156.1 | 54.0 |
| 1995 | 23499.9 | 12451.8 | 11048.1 | 1403.7 | 2808.6 | 1487.8 | 1320.8 | 167.0 |
| | | | | | | | | |
| 1996 | 24133.8 | 12576.4 | 11557.4 | 1019.0 | 2898.8 | 1510.5 | 1388.3 | 122.2 |
| 1997 | 26967.2 | 15160.7 | 11806.5 | 3354.2 | 3251.6 | 1827.9 | 1423.7 | 404.2 |
| 1998 | 26849.7 | 15223.6 | 11626.1 | 3597.5 | 3239.5 | 1837.1 | 1402.4 | 434.7 |
| 1999 | 29896.2 | 16159.8 | 13736.4 | 2423.4 | 3606.3 | 1949.3 | 1657.0 | 292.3 |
| 2000 | 39273.2 | 20634.4 | 18638.8 | 1995.6 | 4742.9 | 2492.0 | 2250.9 | 241.1 |
| | | | | | | | | |
| 2001 | 42183.6 | 22024.4 | 20159.2 | 1865.2 | 5096.5 | 2661.0 | 2435.5 | 225.5 |
| 2002 | 51378.2 | 26947.9 | 24430.3 | 2517.6 | 6207.7 | 3256.0 | 2951.7 | 304.3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2003 | 70483.5 | 36287.9 | 34195.6 | 2092.3 | 8509.9 | 4382.3 | 4127.6 | 254.7 |
| 2004 | 95539.1 | 49103.3 | 46435.8 | 2667.5 | 11545.5 | 5933.2 | 5612.3 | 320.9 |
| 2005 | 116921.8 | 62648.1 | 54273.7 | 8374.4 | 14219.1 | 7619.5 | 6599.5 | 1020.0 |
| | | | | | | | | |
| 2006 | 140971.4 | 77594.6 | 63376.9 | 14217.7 | 17604.0 | 9689.4 | 7914.6 | 1774.8 |
| 2007 | 166740.2 | 93455.6 | 73284.6 | 20171.1 | 21737.3 | 12177.8 | 9559.5 | 2618.3 |
| 2008 | 179921.5 | 100394.9 | 79526.5 | 20868.4 | 25632.6 | 14306.9 | 11325.6 | 2981.3 |

*Source:* China Statistics Year Book 2009, National Bureau of Statistics of China at http://www.sei.gov.cn/try/hgjj/yearbook/2009/indexce.htm

**Table 6: Total volume of import and export between China and other countries and regions**

| ***10,000USD*** | | | | | | |
|---|---|---|---|---|---|---|
| ***Nation/region*** | ***2007*** | | | ***2008*** | | |
| | ***Total volume of Export & Import*** | ***Total volume of Export*** | ***Total volume of Import*** | ***Total volume of Export & Import*** | ***Total volume of Export*** | ***Total volume of Import*** |
| Total | 217372602 | 121777576 | 95595026 | 256325523 | 143069307 | 113256216 |
| Asia | 118780058 | 56787403 | 61992655 | 136670464 | 66411850 | 70258614 |
| Africa | 7365693 | 3729773 | 3635920 | 10720686 | 5123992 | 5596694 |
| Europe | 42752139 | 28784856 | 13967283 | 51148109 | 34342205 | 16805904 |
| Latin America | 10265030 | 5153940 | 5111090 | 14340599 | 7176204 | 7164395 |
| North America | 33252284 | 25211509 | 8040776 | 36834226 | 27427243 | 9406982 |
| Pacific | 4951455 | 2110096 | 2841359 | 6611439 | 2587812 | 4023627 |
| Others | 5942 | | 5942 | 5849 | | 5849 |

*Source:* China Statistics Year Book 2009, National Bureau of Statistics of China at http://www.sei.gov.cn/try/hgjj/yearbook/2009/indexce.htm

Table 6 shows that trend in China's exports and imports to different regions of the world. It is very clear that Asian region is the top destination for China's exports, followed by Europe and North America. This is same in the case of its imports, that is, predominantly imports come from Asian region, followed by European region and North America. Major export commodities included: electrical and other machinery, including data processing equipment, apparel, textiles, iron and steel, optical and medical equipment; and major imports included electrical and other machinery, oil and mineral fuels, optical and medical equipment, metal ores, plastics, organic chemicals. The major export partners in 2008 included: US 17.7%, Hong Kong 13.3%, Japan 8.1%, South Korea 5.2%, Germany 4.1%. The major import partners in 2008 included: Japan

13.3%, South Korea 9.9%, Taiwan 9.2%, US 7.2%, Germany 4.9% (CIA, 2009). While the US and the Europe are major markets apart from Asian countries for exports from China, the Asian economies are the main source for imports to China.

**Table 7: Inward Foreign Direct investment: China and India**

| *Country* | *FDI Inward Stock* | | | | | *FDI Net Inflows* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *US$ in millions* | *% of GDP* | | | | *US$ in millions* | *% of GDP* | | | |
| | *2007* | *1990-1995* | *1996-2000* | *2001-2005* | *2007* | *2007* | *1990-1995* | *1996-2000* | *2001-2005* | *2007* |
| China | 327,087 | 9.7 | 16.0 | 13.5 | 9.6 | 83,521 | 3.6 | 4.1 | 3.3 | 2.5 |
| India | 76,226 | 0.9 | 3.0 | 5.2 | 6.7 | 22,950 | 0.2 | 0.7 | 0.9 | 2.0 |

*Source:* ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 10 p. 183, New York: United Nations

Table 7 shows that the FDI inflow remained very significant over the years (2.5% of GDP in 2007) and it was nearly four times that of India.

**Table 8: Major Macroeconomic Indicators (2008-2009) - Comparison of China to Other Emerging Economies**

| **Indicators** | **Brazil** | **India** | **China** | **South Africa** |
|---|---|---|---|---|
| *GDP Real Growth Rate (%)* | | | | |
| 2007 | 5.7 | 9.0 | 13.0 | 4.9 |
| 2008 | 5.9 | 7.1 | 9.0 | 3.1 |
| 2009* | 0.1 | 6.5 | 8.7 | -1.9 |
| *Industrial Production Growth (%)* | | | | |
| 2009* | -7 | 7.6 | 8.1 | -7 |
| *Debt – External (US$-billion)* | | | | |
| 2008 | 262.9 | 232.5 | 400.6* | 71.8 |
| 2009 | 216.1* | 223.9* | 347.1* | 73.8 |
| *Public Debt (% of GDP)* | | | | |
| 2008 | 38.8* | 57.6* | 15.6* | 31.6* |
| 2009 | 46.8* | 59.6* | 18.2* | 35.7* |
| *Inflation Rate (%)* | | | | |
| 2008 | 5.9 | 8.3* | 5.9* | 11.3* |
| 2009 | 4.2* | 10.7* | -0.8* | 7.2* |
| *Reserve of Foreign Exchange & Gold (US$)* | | | | |
| 2008 | 193.8 billion* | 254.0b | 1.96 trillion* | 34.1b* |
| 2009 | 238.0 billion* | 287.5b | 2.21 trillion* | 37.4b* |
| *Stock of Direct Foreign Investment - At Home (US$- billion)* | | | | |
| 2008 | 294.0 | 123.4* | 758.9* | 120.0* |
| 2009 | 318.5 | 161.3* | 576.1* | 125.7* |
| *Stock of Direct Foreign Investment - Abroad (US$- billion)* | | | | |
| 2008 | 127.5* | 61.8* | 184.0* | 63.6* |
| 2009 | 124.3* | 77.4* | 227.3* | 65.1* |
| *Exports (US$)* | | | | |
| 2008 | 197.9 billion* | 200.9b | 1.43 trillion* | 82.12b* |
| 2009 | 158.9 billion* | 165.0b* | 1.19 trillion* | 67.93* |
| *Imports (US$)* | | | | |
| 2008 | 173.1 billion* | 322.3b* | 1.13 trillion* | 90.57b* |
| 2009 | 136.0 billion* | 253.9b* | 921.5b* | 70.24b* |

*Source:* CIA – The World Fact Book (2009)

Table 8 shows that among the 4 emerging economies, China is in far better position among the emerging countries in terms of number of macroeconomic indicators including GDP real growth rate, exports and imports, FDI, Foreign exchange reserve, inflation, industrial production growth, current account balance (% GDP), external debt refinancing needs. South Africa is in unfavourable position in terms of number of indicators, but its FDI stocks at home and abroad are comparable to those of India. In terms of public debt (% GDP) South Africa is in a better position than India and Brazil.

These specific advantages appear to have helped China to recover faster from the global recession. A number of indicators in 2009 pointed to this. For example, car sales increased by 53%, industrial profits increased by 70% in the three months to November compared with a year earlier, exports up by 18%, year on year, and imports jumped 56% due to strong domestic demand (*Economist*, 16 January 2010).

When China unveiled its stimulus package, some expressed concerns that the economy may suffer long slump due to excessive lending, overinvestment and overvalued share and house prices, as it happened in Japan during the 1980s. Others also argued that because of the financial crisis in the US and the collapse of American spending power, China's export-led economy would be seriously affected. These did not materialise as some feared. First, China did not follow the experience of Japan due to major differences between the two. For example, while Japan's property boom was driven by credit, in China one quarter of home buyers pay cash, and generally mortgage covers only 50% of a property's value. Similarly, the share prices in China are not as high as they were in Japan in 1980s. Second, China was able to successfully avoid serious impact caused by drop in demand for its exports in the US by diversifying to other emerging markets. In 2009, Chinese exports to India, Brazil, Mexico and Indonesia have grown by between 30% and 50% (*Sunday Times*, 14 February 2010). “When China's government announced its stimulus package in November 2008, the pessimists claimed that it contained little new money. In fact, it turned out to be perhaps the biggest and most successful intentional monetary and fiscal stimulus in history” (*Economist*, 16 January 2010).

## 4. Analysis

In this section we compare the data from previous section related to China and global recession with the 6 sets of NSI components/ sub-elements identified in the conceptual framework (see Table 9). By this we try to show how analysing all 6 sets of NSI related data could identify the potential mitigating capability of an individual NSI and help to draw some general conclusions.

One of the reasons for China not being affected seriously by the financial crisis in the US and EU is the nature of banking and financial system in China. The government control over the financial system has been much stronger. For example, the reserve requirements of banks were constantly raised from 7% in 2003 to 15% in 2008 and banks are holding over 80% of central bank securities issued for that purpose (Ayaz, 2008, p.21). China was able to provide fiscal support because of its reserve stockpiles, more credible inflation-targeting regimes, and stronger public balance sheets.

Although the emerging economies in general have been affected by the global recession and saw their growth reduced by the end of 2008, China did not see such decline mainly because of lower shares of their export sectors in domestic production and more resilient domestic demand. China's policy measures have supported domestic activity and the first quarter of 2009 has shown some signs of a turnaround in economic activity (IMF, 2009, pp.4-5, p.71). This is also reflected in the Shanghai stock market which was "one of the world's best performing markets in 2009" (Economic Intelligence Unit, 2009, p.16). Also, the Bank of China and China Merchants Bank and smaller institutions have been able to raise money either through initial public offerings or direct placements to state-owned industrial companies. Between September 2009 and February 2010, they were able to rise over 200 billion-250 billion, which appears to have helped China a faster recovery from the global crisis (*Economist*, 27 February 2010).

Another factor that helps China to minimize the impact of global recession is the nature outward investment by residents. Unlike Indian firms which acquired assets abroad funded by capital inflows, China's companies acquired assets abroad by foreign exchange earnings from trade surpluses. That is, their acquisition of assets abroad has been based on their success of competition in international markets (Ayaz, 2008, pp.27-28).

**Table 9: Some Major Components of NSI that Could have Mitigating Impact on Recession – China**

| *Components of NSI* | *Nature/ Level of Presence in National Economy of China* |
|---|---|
| *1. The general investment climate and economic policy framework:*<br>(a)Macroeconomic and social stability<br>(b) National fiscal policy regime<br>(c) Foreign debt<br>(d) Inflation<br>(e) Interest rate and<br>(f) Regulatory regime such as trade and tax policies<br>(g) Nature and role of FDI | (a) More stronger than other emerging countries. Although GDP growth declined from 11.4 % in 2007 to 9% in 2008, and to 8.7% in 2009 it is still high despite the global recession<br>(b) Current account balance is significant (about 11% of GDP); US$b 319.8 in 2009 (6.9% of GDP) and US$b271.7 in 2010 (5.2% of GDP) forecasted by Economic Intelligence Unit (2009).<br>(c) External financing (total bonds, equities, and loans) amounted to US$30b in 2008.<br>(d) Inflation increased from 4.8% in 2007 to 5.9 in 2008; and it experienced deflation, i.e. -0.7% in 2009 because of global recession.<br>(e) Reduced interest rate / RMB appreciated significantly despite global crisis.<br>(f) Strong government control and regulatory regime; responded to present crisis with big stimulation package (US$586b)<br>(g) FDI inflow declined significantly. |
| *2. Market, per capita income, domestic savings:*<br>(a) Domestic market size / structure<br>(b) Links to regional and global markets<br>(c) Domestic savings Growth | (a) Large domestic market than other cases and strong domestic demand<br>(b) Strong links to Asian markets as well as global markets such as EU and the US<br>(c) High gross domestic savings rate of growth (50% of GDP). Significant growth in urban per capita disposable income and rural per capita net income until 2008 (they declined significantly in 2009) |
| *3. Industrial structure:*<br>(a) Presence of diverse industrial structure<br>(b) Strength of domestic firms<br>(c) Presence and role of foreign firms<br>(d) Links to foreign companies/ foreign financial market | (a) Significantly diversified sectors with manufacturing sector leading. But this sector seems to have been the most affected sector due to current global crisis.<br>(b) Strong domestic firms. They are more conservative borrowers. Stock prices fell in response to global crisis.<br>(c) Strong presence of foreign firms. Foreign investors withdrew funds due to global crisis.<br>(d) Strong links to foreign financial market, but Chinese firms are not facing serious risks due to this. |
| *4. Financial Institutions:*<br>(a) Banking sector<br>(b) Role and effectiveness of the Central Bank<br>(c) Links to foreign financial market | (a) Strong government control over banking and financial sector with stringent reserve requirements. EU and the US banking sectors are looking towards Chinese financial sector to gain recovery from current crisis.<br>(b) Strong central bank with strong capability to meet liquidity demands of the financial sector<br>(c) Strong links to foreign financial market, but China has taken risks in investing in foreign financial markets. |
| *5. Foreign Trade:*<br>(a) Nature of exports<br>(b) Export markets (Destinations)<br>(c) Dependence on commodity exports | (a) Exports (particularly manufacturing) declined due to current recession. This led to decline in imports and resulted in trade surplus.<br>(b) Main export markets are Asia, EU (7% of GDP), US (8% of GDP); main markets for imports are in Asia, followed by the US and Germany.<br>(c) Less significant dependence on commodity exports. |
| *6. Skills, R&D, and Technology development:*<br>(a) Investment in education and skills (human resources) development<br>(b) Investment in R&D | (a) Investment in education and skills has been significant. Public investment on education has reached about 5% of GDP in 2008.<br>(b) Investment in R&D has been between 0.86 in 2000 to 0.92% of GDP in 2006 (about 70% by Business enterprises and about 25% by the government). This increased to 1.5% of GDP in 2008. |

Furthermore, China's capital-spending through the stimulus package did not result in industrial overcapacity as believed by some, as it was driven mainly by infrastructure investment and also because investment in manufacturing declined sharply during this period. It is also believed that "by and large, investment in roads, railways and the electricity grid will help China sustain its growth in the years ahead" (*Economist*, 16 January 2010). The recession helped to bring down food and commodity prices which helped China's economic recovery. The recession also helped to correct some of the imbalances in the industry and economy. For example, manufacturers of cheap goods and inefficient businesses went out of business because of the sudden collapse of the export market, which forced Chinese manufacturers to move up the technological ladder. Also, the drop in exports has encouraged manufacturers to move their operations from coastal regions to inland to cut costs and meet domestic demand which appears to be helping to correct some historic regional imbalances (Yao, 2009). It appears that the perception of China's dependence on the US export market would have serious impact on its economy is rather misplaced, although it had some negative impacts.

Although the Chinese national currency renminbi (RMB) that is pegged to the dollar have also appreciated in real effective terms, it has remained broadly unchanged relative to the dollar. While other leading exporters such as Japan have experienced sharp decline in demand for manufacturing exports, China is expected to witness significant economic growth (though less than recent years,) with increasing domestic demand (IMF, 2009, p.16 and 71). Although growth in 2009 was 8.7% (compared to 13% growth rate recorded pre-crisis in 2007), it is still considered a strong performance in the current global recession conditions when many Asian economies experienced severe contractions. IMF has identified two factors for this. First, although the exports declined significantly, its impact is not severe as they have a smaller share of the economy, particularly after factoring in its high import content. Second, the government has acted aggressively with policy measures to stimulate it domestic market with the aim of helping to boost consumption (IMF, 2009, p.72). Retail sales have increased due to relatively good job figures (e.g. 1.6m jobs were created in the first three months of 2009) and rising wages. "Preliminary indicators suggest that the government's efforts to support economic growth have had faster impact that was expected" (Economic Intelligence Unit, 2009, p.5).

In 2009, with the beginning of economic recovery China has emerged as the world's largest exporter, surpassing Germany, it also became the world's largest market for vehicles, surpassing the US, and Chinese stock market overtook Japan as the world's second-biggest, measured by the market capitalisation of its companies. It is holding the world's largest foreign reserves, over $2.1 trillion. The global recession and strong national economy has provided an opportunity

for China a leading role in formulating the international economic policy to address the economic crisis. As a result, G20 Group which met in London to consider international response to the global finance crisis agreed that the quota system of the IMF and World Bank would be adjusted to raise China's contribution and its voting rights. Dominique Strauss-Kahn, Managing Director of the International Monetary Fund (IMF) stated: "China's role in the international policy debate has been rising in tandem with its growing economy. As a key member of the G20, China is helping to design the global priorities for the future and devise solutions to global problems".

The huge US$ reserve in China also helped it to contribute to global liquidity through loan deals with a number of countries such as member countries of Association of South East Asian Nations (ASEAN), Taiwan, Kazakhstan, Russia, Brazil, and Venezuela. China also increased the investment through China-Africa Development Fund. The global recession also helped China to forge trade deals in its national currency RMB. China's recovery has also helped commodity-producing nations, which are generally big losers during recessions because of collapsing commodity prices. As China is the world's biggest consumer of many raw materials, after the US, demands from China helped maintain commodity prices. This particularly helped countries in the Middle East, Latin America, Australia and Canada. This in turn helped China in signing long-term trade deals in RMB rather than US$, with the effect of slowly turning the RMB into an alternative to the US$ (King, 2009).

## 5. Conclusions

On the NSI side we took six variables such as macroeconomic stability, market structure, per capita income and domestic savings, industrial structure, financial institutions, foreign trade and skills, R&D and technology development as relevant indicators of how changes in these indicators is correlated to the impact of the recession as much as these can be read through the available data.

On the mitigating capability side we correlated whether the actions taken are defensive by taking measures like imposing protection, reduction in bank lending, consumer fear to spend and save and even hoard, reducing expenditure on R&D, reducing imports and finding new markets for reduced exports as a result of the recessionary downturn and changes in public policy.

What emerges from the case of China is that the recessionary impact has forced the regulatory tightening by Government and made it to introduce a massive stimulus package to invigorate the economy. Whilst the recession has made some negative impact on the economy, the basic elements of the NSI appear to function to bring about and overcome the recessionary downturn by taking macroeconomic stability without imposing stringent policies of control,

restricting markets, domestic demand and per capita income, and continuing to fund education, skills development and R & D.

It appears that China has not been severely affected by the global recession mainly due to the inherent strength of its NSI. Also, it appears that China has decided to use the global recession as an opportunity rather than an obstacle and as 'blessing in disguise' to introduce changes and re-engineer its economy and NSI. For example, China used the global financial crisis to introduce and strengthen strong regulatory and competitive measures against all but the state-controlled local financial institutions. According to Charles Kaye, CEO of the global private-equity firm Warburg Pincus: "All other governments have responded to this crisis defensively, protecting their weak spots. China has used it to move aggressively forward." (Zakaraia, 2009). The NSI in China appears to have helped the country to emerge as a more stable and strong economy in the world. This is reflected by the comment made by Chinese official to the *Financial Times*: "We used to see the US as our teacher but now we realise that our teacher keeps making mistakes and we've decided to quit the class" (Stelzer, 2010, p.4).

Overall the assumption we had that economies in transition are evolving strong NSI (the six identified NSI characteristics) that can cope with recessionary downturn appears to be borne out by the available data for the case of China. They showed that despite some negative impacts and problems, China's economy has emerged stronger from the recession largely due to strong NSI. They also showed that global recession has led to changes in the NSI characteristics such as mobility of firms from coastal regions to inland regions, reengineering domestic demand and market, and changes to its financial market and so on.

This paper illustrates the importance of framing the challenge of the recession by using the NSI of a country. That is, instead of focusing on individual institutions, we have taken the NSI as a whole in relation to estimating the capability of the country to work its way out of the global recession. Very often when we look at the discussions of recession, the NSI is not used. What we have done here is to bring the NSI to the forefront to look at both political and economic system and its ability to respond to the recessionary tide.

The second major contribution is the policy learning that is needed when global recession confronts specific NSI. What we can say now from the policy side is that there is a need for integrated policy response (taking into account all the 6 sets of NSI components that we have identified in our conceptual framework) not an ad-hoc or compartmentalised approach (e.g. tinkering trade or banking regulations, or fiscal policy) to overcoming the crisis. Such integrated policy

approach that takes all the relevant NSI components into account will be far more robust in responding to and managing the impact of any global recessionary crisis.

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